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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/962,040	10/31/1997	JOHN M. CARNEY		8385

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EXAMINER

JONES, DWAYNE C

ART UNIT	PAPER NUMBER
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1614

DATE MAILED: 05/07/2003

31

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/962,040

Applicant(s)

CARNEY ET AL.

Examiner

Dwayne C Jones

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on amendment and RCE of 23 DEC 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-29, 32-35, and 39-52 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 28, 29 and 32-52 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☒ Claim(s) 17-27 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Claims 17-29, 32-35, and 39-52 are pending.
2. Claims 17-27 are non-elected and withdrawn from consideration.
3. Claims 28, 29, and 32-52 are rejected.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 28, 29 32-35 and 39-51 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a credible asserted utility or a well-established utility.

6. Because applicants' are claiming the prevention or prophylaxis of diseases or conditions which arise from oxidative damage to the skin, it is presumed that applicants intend to prevent or retard physiological aging and not chronological aging. Moreover, chronological aging reads on the stoppage of time, which is not credible on its face. Thus the preventing or prophylaxis of aging via systemic treatment is itself not credible on its face in view of current knowledge in the art. No compound is currently known that would in fact possess these effects.

7. Physiological aging is a multi-faceted process, which does not involve a single chemical or biological effect. Various theories have been propounded that include (a) loss of telomerase activity and the relationship of telomerase activity and the

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relationship of telomere length to cell death, (b) accumulation of DNA mutations, and (c) temporal genes that regulate the output of structural genes, (as cited in Lehninger et al., pages 341 and 344). In view of these theories, one skilled in the art would conclude that the diverse aspects of aging, e.g. loss of muscle tone, slowing of metabolism, graying of hair, etc. operate via different mechanisms. There is no reason why one skilled in the art would expect a single compound to prevent or retard all of these diverse aspects.

8. A systemic anti-aging utility has been alleged in U.S. Patent No. 5,157,031, but that utility is neither exemplified nor claimed therein. Furthermore, since the claims 28-35 and 39-51 are directed to methods, the utility is limited to those recited methods and there is no non-asserted well-established utility for such methods.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 28, 29, 32-35 and 39-51 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for treating the skin due to ionizing radiation, burns, wounds, and ulcer treatment and healing and aging does not reasonably provide enablement for the prevention of aging as well as dysfunctions or diseases that arise from oxidative damage to the skin that result from other than ionizing radiation, burns, wounds, and ulcer treatment and healing and aging. The specification

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does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

11. The factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described in In re Wands, 8 USPQ2d 1400 (Fed. Cir. 1988). Among these factors are: (1) the nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary. When the above factors are weighed, it is the examiner's position that one skilled in the art could not practice the invention without undue experimentation.

(1) The nature of the invention:

The instant invention is directed to the prevention of aging, ionizing radiation, burn, wound, and ulcer treatment and healing as well as treatment and prevention of other types of dysfunctions or diseases that arise from oxidative damage to the skin. The method comprises administering a spin trapping compound in order to achieve the instantly claimed methods of prevention and treatments of diseases and dysfunctions diseases that arise from oxidative damage to the skin other than those resulting from ionizing radiation, burns, wounds, and ulcer treatment and healing.

(2) The state of the prior art

The compounds of the inventions are spin-trapping compounds.

(3) The relative skill of those in the art

The relative skill of those in the art of pharmaceuticals is high.

(4) The predictability or unpredictability of the art

The unpredictability of the pharmaceutical art is very high. In fact, the courts have made a distinction between mechanical elements function the same in different circumstances, yielding predictable results, chemical and biological compounds often react unpredictably under different circumstances. Nationwide Chem. Corp. v. Wright, 458 F. Supp. 828, 839, 192 USPQ 95, 105(M.D. Fla. 1976); Aff'd 584 F.2d 714, 200 USPQ 257 (5th Cir. 1978); In re Fischer, 427 F.2d 833, 839, 166 USPQ 10, 24 (CCPA 1970). Thus, the physiological activity of a chemical or biological compound is considered to be an unpredictable art. For example, in Ex Parte Sudilovsky, the Court held that Appellant's invention directed to a method for preventing or treating a disease known as tardive dyskinesia using an angiotensin converting enzyme inhibitor involved unpredictable art because it concerned the pharmaceutical activity of the compound. 21 USPQ2d 1702, 1704-5 (BDAI 1991); In re Fisher, 427 F.2d 1557, 1562, 29 USPQ, 22 (holding that the physiological activity of compositions of adrenocorticotrophic hormones was unpredictable art); In re Wright, 999 F.2d 1557, 1562, 29 USPQ d, 1570, 1513-14 (Fed. Cir. 1993) (holding that the physiological activity of RNA viruses was unpredictable art); Ex Parte Hitzeman, 9 USPQ2d 1821, 1823 (BDAI 1987); Ex Parte Singh, 17 USPQ2d 1714, 1715, 1716 (BPAI 1990). Likewise, the physiological or

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pharmaceutical activity of spin-trapping compounds prior to filing of the instant invention was an unpredictable art.

(5) The breadth of the claims

The instant claims are very broad. For instance, claim 28 is directed to the administering a spin trapping compound in order to achieve the instantly claimed methods of prevention and treatments of diseases and dysfunctions diseases that arise from oxidative damage to the skin other than those resulting from ionizing radiation, burns, wounds, and ulcer treatment and healing. The breadth of claims was a factor in Amgen v. Chugai Pharm. Co., 927 F.2d 1200, 18 USPQ2d (Fed. Cir.), cert. Denied, 502 U.S. 856 (1991). In the Amgen case, the patent claims were directed to DNA sequences that encoded amino acid sequences. Because a very small change in the amino acid sequence of a protein can result in a very large change in the structure-function activity of a protein and because the laws of protein folding are in such a primitive state, predicting protein structure (and hence, activity) while knowing only the sequence of the protein is akin to predicting the weather for a date in the future.

(6) The amount of direction or guidance presented

The amount of guidance or direction needed to enable the invention is inversely related to the degree of predictability in the art. In re Fisher, 839, 166 USPQ 24. Thus, although a single embodiment may provide broad enablement in cases involving predictable factors, such as mechanical or electrical elements, in cases involving

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unpredictable factors, such as most chemical reactions and physiological activity, more teaching or guidance is required. In re Fischer, 427 F.2d 839, 166 USPQ 24; Ex Parte Hitzeman, 9 USPQ 2d 1823. For example, the Federal Circuit determined that, given the unpredictability of the physiological activity of RNA viruses, a specification requires more than a general description and a single embodiment to provide an enabling disclosure for a method of protecting an organism against RNA viruses. In re Wright, 999 F.2d 1562-63, 27 USPQ2d 1575. In the instant case, given the unpredictability of the physiological or pharmaceutical activity of a spin trapping compound to be effective in treating diseases and dysfunctions diseases that arise from oxidative damage to the skin *other than* those resulting from ionizing radiation, burns, wounds, and ulcer treatment and healing as well as the prevention of is insufficient for enablement. The specification provides no guidance, in the way of enablement for administering a spin trapping compound in order to achieve the instantly claimed methods of prevention and treatment of diseases and dysfunctions diseases that arise from oxidative damage to the skin *other than* those resulting from ionizing radiation, burns, wounds, and ulcer treatment and healing. In re Fisher, 427 F.2d 833, 166 USPQ 18 (CCPA 1970) (contrasting mechanical and electrical elements with chemical reactions and physiological activity). See also In re Wright, 999 F.2d 1557, 27 USPQ2d 1510 (Fed. Cir. 1993); In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). This is because it is not obvious from the disclosure of one species, what other species will work. In re Dreshfield, 110 F.2d 235, 45 USPQ 36 (CCPA 1940), gives this general rule: "It is well settled that in cases involving chemicals and chemical compounds, which

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differ radically in their properties it must appear in an applicant's specification either by the enumeration of a sufficient number of the members of a group or by other appropriate language, that the chemicals or chemical combinations included in the claims are capable of accomplishing the desired result." The article "Broader than the Disclosure in Chemical Cases," 31 J.P.O.S. 5, by Samuel S. Levin covers this subject in detail. A disclosure should contain representative examples, which provide reasonable assurance to one skilled in the art that the compounds fall within the scope of a claim will possess the alleged activity. See In re Riat et al. (CCPA 1964) 327 F2d 685, 140 USPQ 471; In re Barr et al. (CCPA 1971) 444 F 2d 349, 151 USPQ 724.

(7) The presence or absence of working examples

As stated above, the specification discloses of administering a spin trapping compound in order to achieve the instantly claimed methods of prevention and treatment of diseases and dysfunctions diseases that arise from oxidative damage to the skin *other than* those resulting from ionizing radiation, burns, wounds, and ulcer treatment and healing. However, the instant specification only has enablement for administering a spin trapping compound in order to achieve the instantly claimed methods of treating diseases and dysfunctions diseases that arise from oxidative damage to the skin which result from ionizing radiation, burns, wounds, and ulcer treatment and healing, as opposed to the prevention of these above-stated ailments and the treatment, not to mention the prevention, of diseases and dysfunctions diseases that

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arise from oxidative damage to the skin *other than* those resulting from ionizing radiation, burns, wounds, and ulcer treatment and healing.

(8) The quantity of experimentation necessary

The quantity of experimentation needed to be performed by one skilled in the art is yet another factor involved in the determining whether "undue experimentation" is required to make and use the instant invention. "The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed.'" In re Wands, 858 F.2d 737, 8 USPQ2d 1404 (citing In re Angstadt, 537 F.2d 489, 502-04, 190 USPQ 214, 218 (CCPA 1976)). For these reasons, one of ordinary skill in the art would be burdened with undue "painstaking experimentation study" to determine how the spin trapping compounds of the instant invention are used to prevent and treat diseases and dysfunctions that arise from oxidative damage to the skin *other than* those resulting from ionizing radiation, burns, wounds, and ulcer treatment and healing as well as prevention of diseases and dysfunctions diseases that arise from oxidative damage to the skin which result from ionizing radiation, burns, wounds, and ulcer treatment and healing that would be enabled in this specification.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 28, 29 32-35 and 39-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood et al. of U.S. Patent No. 4,849,346 in view of Proctor et al. of 327,263. Wood et al. teach that oxygen radicals are known to cause a number of

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disruptive processes at the cellular level, such as lipid peroxidation, cleavage of DNA, cell mortality, and alterations of enzyme activity. Wood et al. teach that these oxygen radicals can be generated by a number of physical or biological processes, such as enzymatically, photochemically, or radiochemically, (see column 1, lines 11-28). In fact, the invention of Wood et al. is directed to determining the ability of mammalian cells to resist the internalization of free radicals, such as the oxygen-derived free radicals generated by the action of ultraviolet light on the skin, (see column 1, lines 30-34). Wood et al. disclose that mammalian cells are contacted with a spin labeled compound, namely the spin-labeled quaternary ammonium salts of formula I, (see column 3 and 4). Wood et al. do not teach of the pharmaceutical administration of these nitroxide and spin labeled-compounds. However, Wood et al. teach the skilled artisan of the use of a spin-labeling compound to remove oxygen free radicals. It would have been obvious to the skilled artisan to utilize various types of spin-labeling compounds so long as these spin-labeling compounds were pharmaceutically acceptable.

16. The prior art reference of Proctor et al. does teach of the topical administration of various types of free radical scavengers. In fact, Proctor et al. teach of pharmaceutically utilizing the compound of N-tert-Butyl-alpha-phenyl nitroxide, (see pages 3-5). When the teaching of Wood et al. are combined with those of Proctor et al., the skilled artisan is provided with the motivation to therapeutically administer compounds that are known to act as free radical scavengers. For these reasons, it would have been obvious to utilize various types of compounds to act as scavengers of free radicals in order to deter the detrimental effects caused by free radicals to cell and

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body. Accordingly, Finkelstein et al. teach of the spin trapping of superoxide by the nitron of 5-5-dimethyl-1-pyrroline N-oxide, (see abstract). Maillard et al. teach of using various spin-trapping compounds, such as 5-5'-dimethylpyrroline-N-oxide (DMPO), phenyl-N-tert-butyl nitron, and alpha-4-pyridyl-1-oxide-N-tert-butyl nitron. Because the prior art, for instance Proctor et al., has shown of the topical use of compounds which are known to act as free radical scavengers, the skilled artisan would have been motivated to pharmaceutically utilize compounds that are known to act as free radical scavengers in order to offset the detrimental effects caused by their generation from physical or biological processes, such as enzymatic, photochemical or radiochemical processes as disclosed by Wood et al. The determination of a dosage having the optimum therapeutic index is well within the level of one having ordinary skill in the art, and the artisan would have been motivated to determine optimum amounts to get the maximum effect of the drug.

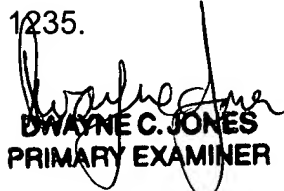
Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. C. Jones whose telephone number is (703) 308-4634. The examiner can normally be reached on Mondays through Fridays from 8:30 am to 6:00 pm. The examiner can also be reached on alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marianne Seidel can be reached on (703) 308-4725. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4556.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-

1235.


DWAYNE C. JONES
PRIMARY EXAMINER

Tech. Ctr. 1614

May 3, 2003